



Coho and Steelhead Spawner Survey Update



Large coho male working his way up a riffle in Olema Creek Dec. 2006
Photo Taken by Casey Del Real

Volunteer Opportunities!

Although our spawner season has come to a close, there are still ample opportunities to participate in the monitoring and restoration of the coho and steelhead of West Marin. Smolt trap operations will begin March 19, 2007 and last for approximately three months. Smolt trapping is an excellent opportunity to monitor and handle a wide variety of aquatic species including coho salmon, steelhead, stickleback, sculpin, salamanders...and a whole lot more.

End of the Season Spawner Summary

A big thanks to all of our volunteers who participated in the 2006-2007 Coho and Steelhead Spawner Surveys. Through their dedication and flexibility, we were able to successfully complete all our spawner surveys.

2006-2007 Spawner Season:

Female adult coho salmon are 3 years old when they return to spawn. As a result, every three years represents a distinct year class depicting population fluctuations and impacts from the previous year classes. Comparisons can then be made between each year class. From our observations, the 2006-2007 coho salmon represented a weak returning year class. The Olema Creek watershed total redd production for this year class declined by 9% from the 2003-2004 year class levels. The largest decline was observed in Redwood Creek where total redd production declined by 44% for this year class.

On November 12, 2006, a series of storm events increased stream flows to a level that allowed access for returning adult coho to West Marin watersheds. Our first spawner survey was completed on Redwood Creek on 11/20/06. A few adult coho were observed during our first round of surveys representing the earliest return of coho since monitoring began in 1997. It was not until the next winter storm on 12/08/06 that we began to observe spawning activity.

December, with 7.64 inches of rain recorded in Bear Valley, turned out to be the most productive month for coho spawning activity this year. Unfortunately, January was a very dry month with only 1.09 inches of rain. This not only reduced creek flows for spawning but also jeopardized redds that were constructed in the tributaries and in the mainstem of Olema and Redwood creeks. This had the direct effect of considerably reducing spawning activity.

Our last round of surveys began on 02/15/07 with no new coho spawning activity observed. Steelhead spawning activity, which began in Mid-January, was discovered to be going strong with steelhead observed in both the mainstem of Redwood and Olema Creeks and in the upper reaches of Fern Creek, a tributary to Redwood Creek, where typically no adult salmonids are detected.

Results:

Below are the Peak Live Plus Cumulative Dead (PLD) Indexes, Area Under the Curve (AUC) estimates and total redds for this coho year class in monitored streams. The PLD index provides a minimum count of fish within a watershed and is a way to avoid double counting fish during repeated surveys. It is derived from adding the peak number of live fish observed during a single survey to the total number of carcasses recovered prior to that survey. The AUC estimate allows for population estimates based on observed adult live fish, their resident time (RT), and observer efficiency (OE).

Olema Creek Mainstem experienced a 20% decline in coho redds for this year class from 2003-2004. When John West Fork is taken into account for total watershed redd production, there was a 9 % decline. The difference between PLD indexes of this year and 2003-2004 could have been partly due to poor visibility reducing surveyor efficiency. The AUC ranges also shows a 20% decline of live coho.

Olema Creek Mainstem coho salmon spawner survey information for 1994-95 through 2006-2007.

Year	Number of Surveys	AUC Range 100% OE RT 8-17 days	AUC Range 50% OE RT 8-17 days	PLD Index	Total Redds
2006-2007	6	110-233	220-467	63	70
2003-2004	6	138-293	275-585	138	88
2000-2001	4	75-159	149-317	103	86
1997-1998	8	56-118	112-236	88	126
1994-1995	3	-	-	53	9

John West Fork, a tributary to Olema Creek, showed a 28% increase in total redd production from the previous year class. Unfortunately during the dry month of December two of the 29 redds were completely dewatered in the upper reaches of John West Fork. Again the low PLD Index and AUC range can be attributed to the difficulty of observing live coho shortly following storm events.

John West Fork coho salmon spawner survey information for 1997-98 through 2006-2007.

Year	Number of Surveys	AUC Range 100% OE RT 8-17 days	AUC Range 50% OE RT 8-17 days	PLD Index	Total Redds
2006-2007	7	17-37	34-73	18	29
2003-2004	6	30-64	60-129	41	21
2000-2001	4	42-90	85-180	58	48
1997-1998	5	-	-	12	7

Redwood Creek Mainstem had the lowest coho spawning activity of the four consecutive monitored year class. There was a 44% decline in the amount of total coho redds with a 47-57% decline of returning adult coho spawners depending on the PLD index or AUC range.

Redwood Creek coho salmon spawner survey information for 1997-98 through 2006-2007.

Year	Number of Surveys	AUC Range 100% OE RT 8-17 days	AUC Range 50% OE RT 8-17 days	PLD Index	Total Redds
2006-2007	9	23-48	45-97	29	24
2003-2004	6	43-91	86-182	67	43
2000-2001	5	74-157	148-314	49	35
1997-1998	7	89-188	177-376	65	80

Cheda Creek, a tributary to Lagunitas Creek, showed a slight increase in redd development along with an increase in returning adult coho spawners. Restoration of tributary habitat allows for increased spawning habitat and overwintering refugia that is key to the viability of the coho and steelhead.

Cheda Creek coho salmon spawner survey information for 1997-98 through 2000-2001

Year	Number of Surveys	AUC Range 100% OE RT 8-17 days	AUC Range 50% OE RT 8-17 days	PLD Index	Total Redds
2006-2007	3	2-5	4-9	6	9
2003-2004	3	-	-	1	6
2000-2001	2	-	-	0	0

Monitoring of Pine Gulch was initiated by the discovery of one adult coho salmon from this year class during the 2000-2001 spawner season. During both the 2003-2004 and 2006-2007 surveys, no live adult coho or coho redds were discovered. This year class is the weakest of the three year classes on Pine Gulch.

Volunteer Opportunities:

We are currently looking for volunteers to support us with our upcoming smolt trap operations. In particular, there is currently a need for assistance on Saturdays and Sundays.

For more information about our surveys: contact Casey_Del_Real@partner.nps.gov or call 415-464-5141.

